

CONTENT STANDARD 4: Problem Solving/Research and Development

Students will recognize technology as the result of a creative act, and will be able to apply disciplined problem-solving strategies to enhance invention and innovation.

K-1	2-3	4-5	6	7	8
4.K-1.1 Identify and define a problem. 4.K-1.2 Develop a verbal action plan to solve a problem. 4.K-1.3 Describe one problem-solving model. 4.K-1.4 Apply creative solutions to a technology problem.	4.2-3.1 Describe methods of problem solving. 4.2-3.2 Develop a written action plan to solve a problem. 4.2-3.3 Use a variety of (technology) methods to communicate a solution to a problem. 4.2-3.4 Evaluate a solution to a problem. 4.2-3.5 Work cooperatively in a small group to solve a technical problem.	4.4-5.1 Identify a problem and use a problem-solving method to develop a solution. 4.4-5.2 Develop a solution for a real-life problem. 4.4-5.3 Gather, record and organize data, based on observations. 4.4-5.4 Evaluate and modify a solution to a problem. 4.4-5.5 Differentiate between human problems and needs. 4.4-5.6 Understand the role of creativity in problem-solving. 4.4-5.7 Develop a solution to a real-life problem.	4.6.1 Differentiate between human problems and needs. 4.6.2 Define decision-making research and innovation. 4.6.3 Discuss how technological systems have been used to solve human problems. 4.6.4 Apply cooperative techniques while engaging in group problem-solving activities. 4.6.5 Engage in an activity that requires creativity. 4.6.6 Apply appropriate and effective questioning techniques. 4.6.7 Describe and apply the processes used to make decisions. 4.6.8 Test a design idea through experimentation. 4.6.9 Develop a solution for a real life problem.	4.7.1 Select and apply a general problem-solving model in a laboratory setting. 4.7.2 Identify research methods, material and techniques. 4.7.3 Conduct an applied research project. 4.7.4 Develop, test and modify a design through experimentation. 4.7.5 Differentiate between invention and innovation.	4.8.1 Apply technological systems to solve a posed problem. 4.8.2 Conduct an applied research project related to careers. 4.8.3 Apply a general problem-solving model to improve upon an existing product. 4.8.4 Apply a general problem-solving model including research techniques to invent a product.
9-10			11-12		
4.9-10.1 Use research techniques to support design development. 4.9-10.2 Apply descriptive statistics of average, percentage correlation, and graphing to design outcomes. 4.9-10.3 Develop several alternatives design solutions to the same problem. 4.9-10.4 Use a communication technology to visualize a design idea. 4.9-10.5 Prepare and document a design brief. 4.9-10.6 Select appropriate technical processes and fabricate a prototype.			4.11-12.1 Evaluate design ideas to determine the most appropriate. 4.11-12.2 Identify appropriate sources of information for research. 4.11-12.3 Be familiar with the laws related to copyrights, trademarks, and patents. 4.11-12.4 Present an idea using multimedia technology. 4.11-12.5 Design and conduct a technical experiment. 4.11-12.6 Apply biological materials and processes to solve a problem.		